EXAMPLE 25

10 g of polydimethylsiloxanes (silicone oil) was blended with 15 g of spherical gas atomized powder(less than 44 μm particle size) of Al—Si(12.2% atoic% of Si) alloy and 1.5 g of amorphous submicron boron powder (from Aldrich Chemical Co.). The mixture was blended for 2 hours at room temperature to produce a homogeneous tacky glue like paste. This material was then loaded into a polyethylene syringe for convenient dispensing. The glue was applied onto the surfaces of the SiC CFCC (2.6 mm×4.1 mm×38 mm)bars to be joined together and were spread evenly with a small laboratory spatula. These bars were then butt joined by pushing the bars together with hand pressure and were fired to 1200° C. at the rate of 10° C./min. and holding for 2 hours at 1200° C.

EXAMPLE 26

10 g of methylsesquisiloxane polymer (SR350 from GE Silicones) was dissolved in 5 ml of toluene and blended with 15 g of spherical gas atomized powder(less than 44μm particle size) of Al—Si(12.2% atomic % of Si) alloy and 1.5 g of amorphous submicron boron powder (from Aldrich Chemical Co.). The mixture was gradually concentrated while stirring to produce a homogeneous tacky glue like paste. This material was then loaded into a polyethylene syringe for convenient dispensing. The glue was applied onto the surfaces of the SiC CFCC (2.6 mm×4.1 mm×38 mm) bars to be joined together and were spread evenly with a small laboratory spatula These bars were then butt joined by pushing the bars together with hand pressure and were fid to 1200° C. at the rate of 10° C./min. and holding for 2 hours at 1200° C.

The invention is not limited to the embodiments set forth above, and the invention is set forth in the following claims.

We claim:

1. A bonding agent for joining similar or dissimilar ceramic and ceramic composite materials at relatively low joining temperatures not exceeding about 1200 degrees C., comprising a preceramic polymer, aluminum bearing particulates, and boron particulates.

2. The bonding agent of claim **1** wherein the aluminum bearing particulates are selected from elemental aluminum powder, aluminum alloy powder, and mixtures of elemental aluminum powder with another powder.

3. The bonding agent of claim **1** wherein the boron particulates comprise boron powder having a powder particle size below 1 micron.

4. The bonding agent of claim **1** comprising, in weight %, about 25% to 85% preceramic polymer, about 10% to 70% aluminum bearing powder, and about 2% to 6% boron powder.

5. The bonding agent of claim **1** comprising, in weight %, about 37–38% preceramic polymer, about 55–56% aluminum bearing particulates, and about 5–6% boron particulates.

6. The bonding agent of claim **1** wherein the aluminum bearing particulates comprise an aluminum and silicon alloy powder having a eutectic composition.

7. The bonding agent of claim **6** wherein the eutectic composition melts at about 577 degrees C.

8. The bonding agent of claim **1** wherein the preceramic polymer comprises an oligomeric polymer.

9. The bonding agent of claim **7** wherein the oligomeric polymer comprises silicon-acetylene polymer.

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